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Obstacles in the Motivation of Health Care Workers for Pertussis vaccination

Sabine Wicker^a, Stefan Zielen^b, Markus A. Rose^b

^aOccupational Health Service, University Hospital, Johann Wolfgang Goethe University of Frankfurt, Theodor-Stern-Kai 7, 60590 Frankfurt / Main, Germany; Email: Sabine.Wicker@kgu.de (Corresponding Author)

^bChildren's Hospital, Goethe University of Frankfurt, Theodor-Stern-Kai 7, 60590 Frankfurt / Main, Germany

Abstract

Recently, pertussis has become a problem also in the adult population, with incidences even higher than in children. Pediatric health care workers (HCWs) are an important source of transmission, exposing very young and immunocompromised patients to an increased risk of potentially severe pertussis infections. Encouraging HCWs to get vaccinated can play a vital role in stopping the transmission of pertussis, thereby reducing institutional outbreaks.

In Germany, HCWs come up with all sorts of reasons for not getting pertussis vaccination. This study was meant to provide information in order to better understand the backgrounds of these attitudes.

A survey was conducted at the children's university hospital in Frankfurt, using an anonymous questionnaire. Survey results were used to design an intervention to increase the immunization rate of staff. Disappointingly, our efforts to increase the acceptance of the immunization program by providing information in advance were not yet satisfying.

Misconception about pertussis vaccination was prevalent especially among nursing staff. The main reasons for non-compliance included: unawareness of an own risk of infection, the belief that pertussis is not a serious illness, fear of side effects, the belief that the pertussis vaccine might trigger the pertussis disease itself, and skepticism about the efficacy of the pertussis vaccination.

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Keywords: healthcare worker; pertussis; vaccine uptake rate

Introduction: Recently, pertussis has become a problem also in the adult population, with incidences even higher than in children. Pediatric health care workers (HCWs) are an important source of transmission, exposing very young and immunocompromised patients to an increased risk of potentially severe pertussis infections (Bassin et al. 2004; Calgugar et al. 2006; Zivna et al. 2007). Nevertheless, compliance rates with pertussis vaccination recommendations among HCWs remain low (Goins et al. 2007; Wicker et al. 2008a). The aim of this study was to identify the attitude toward pertussis vaccination among HCWs at a German university children's hospital.

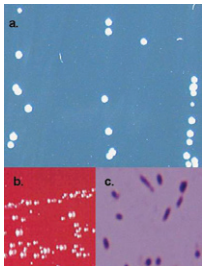


Fig 1: *Bordetella pertussis*

a. and b.: Macroscopic appearance on charcoal agar and Columbia blood agar
c. gram-negative rods (conventional microscopy).

K.P. Hunfeld, Institute of Medical Microbiology and Infection Control,
Johann Wolfgang Goethe-University

Methods: In the Children's Hospital of the Frankfurt university hospital, 55 physicians, 187 nurses and 56 others (e.g., technicians as well as research scientists and administrative staff) are employed. The university hospital offers pertussis vaccination to HCWs through the Occupational Health Service free of charge. A local campaign to increase the pertussis vaccination rates at the university hospital Frankfurt started in July 2006 with a mobile vaccination cart in the paediatric department. Between October and November 2007 paediatric HCWs were asked to complete an anonymous questionnaire regarding their attitudes towards pertussis vaccination.

Results: Of 298 eligible employees, 121 (40.6%) completed the questionnaire. In total, 30.5% of the HCWs were sufficiently immunized against pertussis. The immunization rate of physicians was much higher than among nurses (69.7% vs. 9.7%; $p < 0.001$) (see **Fig. 2**). A much higher proportion of physicians got vaccinated in order to protect the patients (96.6%), whereas only 60.0% of the nurses stated this as a reason for vaccination.

Most of the participants ($n = 45$; 37.2%) stated that they don't know if they had a pertussis vaccination in the past, 35 HCWs (28.9%) had had two to five previous pertussis vaccinations, 20 HCWs (16.5%) had had one previous vaccination. More than five vaccinations were reported by 3 HCWs (2.5%) and 18 HCWs (14.9%) had never been vaccinated against pertussis.

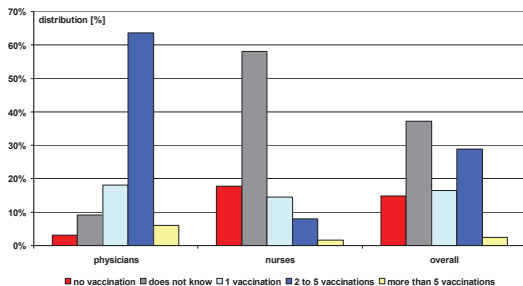


Fig 2: Vaccination rates according job description

Overall the main reasons cited by HCWs for non-compliance with vaccination recommendations were:

- Doubt about being at risks for a pertussis infection (81.0%)
- The belief that pertussis is not a serious illness (27.0%)
- Fear of adverse reaction (20.6%).
- Altogether, 17.5% of the HCWs were afraid that the vaccine might cause pertussis.

Reasons mentioned for compliance with pertussis vaccination were:

- Self-protection (91.4%)
- Protection of patients (81.0%).

Discussion: HCWs are at increased risk of pertussis infection compared to the general population, most likely because of their increased exposure (Plotkin 2005; De Serres et al. 2000; Wright et al. 1999). Immunization of HCWs prevents pertussis spread within institutions and reduces transmission to patients and the morbidity among HCWs, particularly on paediatric and gynaecology/obstetrics wards, where young and/or chronically ill patients are at the highest risks. Nevertheless, HCWs do not follow well-accepted and evidence-based immunization recommendations. In our study misconception about pertussis vaccination was prevalent especially among nursing staff. A similar reluctance towards immunization against other diseases (e.g., influenza) had been reported in previous studies despite this occupational group has the closest contact with patients (Wicker et al. 2008b; Tapiainen

et al. 2005). However, encouraging HCWs to get vaccinated can play a vital role in stopping the transmission of pertussis, thereby reducing institutional outbreaks.

Coupled with the need for information is the need for convenience. In hospital settings, where lack of time is an issue, increasing convenience (e.g., mobile vaccination carts on wards, offering vaccination free of charge, flexible vaccination time) supports HCWs acceptance of immunization programs. Bringing the vaccine directly to the HCWs does not only provide easy access to vaccination, but also a face-to-face interaction to address HCWs questions about vaccination.

In order to appreciate the results of our study some possible limitations need to be addressed. First, we used a self reported anonymous questionnaire. Second, data have been obtained through a survey without data verification from immunization registers. It is well known that the way a survey respondent answer a question is affected by the respondent's memory; this might resulted in selection bias because it might be difficult for HCWs to remember accurately the number of pertussis vaccinations received.

However, optimal control of pertussis in the pediatric acute-care setting ought to focus upon reducing potential pertussis reservoirs in the hospital, including: isolating patients with suspected or documented pertussis infection until a sufficient antibiotic treatment is implemented, and of course, vaccinating all pediatric HCWs with direct patient contact. Further work is needed to increase pertussis immunization rates among pediatric HCWs in Germany.

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